

AMENDMENTS TO THE CLAIMS:

## Claims:

1. **(Currently amended)** A method of creating frequency diversity in a multicarrier OFDM signal to overcome impairment caused by periodic nulls in a multipath channel, the method comprising assigning redundant ~~copies of each data bit~~ symbols, each such redundant symbol representing the same data bits of a message in the same way and modulating the redundant symbols onto to a plurality of carriers to create a ~~nonperiodic~~ non-uniform carrier assignment wherein frequency intervals between carriers assigned to a data bit are different for each interval.
  
2. **(Currently amended)** A method of allocating data bits to multiple carriers for transmission, ~~in a multicarrier modulation symbol, which comprises a plurality of carriers each carrier capable of being modulated with at least one symbol representing at least one data bit, to create frequency diversity and overcome impairment caused by periodic nulls in a multipath channel;~~ the method comprising the steps of:
  - selecting a data bit from a message;
  - selecting a symbol to represent the selected data bit;
  - redundantly assigning the symbol ~~data bit~~ to a plurality of carriers comprising the steps of:
    - assigning the symbol ~~data bit~~ to a first carrier;
    - assigning the symbol ~~data bit~~ to a second carrier with a first carrier spacing from the first carrier;
    - assigning the symbol ~~data bit~~ to a third carrier with a second carrier spacing from the second carrier that is different from the first carrier spacing; and
    - repeating the steps of selecting data bits and selecting a symbol to represent the data bits and redundantly assigning the symbol ~~data bit~~ to carriers ~~until all data bits are assigned to carriers and all carriers have a data bit assigned;~~
  - wherein the assignment of symbols ~~data bit~~ to carriers produces non-uniform ~~non-periodic~~ carrier spacing of carriers modulated by the same symbol ~~data bit~~.
  
3. **(Currently Amended)** The method of claim 2 wherein each carrier spacing for each symbol ~~data bit~~ is different from every other carrier spacing for the symbol ~~data bit~~.
  
4. **(Currently Amended)** The method of claim 3 wherein the ratio of carriers to symbols ~~data bit~~ is 16.
  
5. **(Canceled)**
  
6. **(Currently amended)** A method of transmitting ~~a message comprising bits of data using a plurality of carriers multicarrier modulation symbols over a multipath channel to create~~

~~frequency diversity that is resistant to nulls at periodic frequency intervals, each symbol comprising a plurality of carriers capable of being modulated with at least one data bit, the method comprising the steps of:~~

determining ~~a~~ the number of data bits represented by one ~~transmitted in each symbol;~~

selecting from the message a number of data bits equal to the number of bits ~~transmitted in~~ represented by the one ~~each symbol; and~~

assigning ~~a portion of the one symbol, the portion representing at least one each data bit, to a first plurality of carriers and redundantly assigning the same portion of the one symbol to at least a second unique plurality of carriers, wherein the frequency separation of the first plurality of carriers and the second plurality of carriers used to transmit each data bit is non-uniformly distributed over a set of available frequencies upon which the first and second plurality of carriers are transmitted non-periodic.~~

7. (Canceled)

8. (Canceled)

9. (Currently amended) An OFDM modulator for transmitting a binary data word in a symbol having frequency diversity comprising:

a ramp counter for producing a series of bin number values;

a look up table for mapping the bin number values to bit select values, the look up table comprising entries that ~~produces~~ produce an assignment of bits to non-periodic carriers, the assignment resulting in bits being repeated over a selection of carriers that have a non-uniform distribution over a set of available frequencies upon which the carriers are transmitted within the symbol;

~~a data selector for selecting at least one bit from the binary data word according to each bit-select value; and~~

~~an amplitude mapper for producing complex I and Q carrier amplitudes for the selected bits.~~

10. (Canceled)

11. (Previously Presented) The method of claim 2 wherein some carriers are zeroed to avoid interference resulting from the transmitted signal.

12. (Previously Presented) The method of claim 6 wherein some carriers are zeroed to avoid interference resulting from the transmitted signal.

13. (Previously Presented) The OFDM modulator of claim 9 further comprising means for disabling the I and Q carrier amplitudes for a particular carrier and zeroing the transmitted energy for that carrier.